

Client's ref. : 92A-042US
Our ref: 0683-9131usf /Karen

What is claimed is:

1 1. A method for encoding a data signal, comprising:
2 encoding the data signal into an encoded data signal,
3 wherein the encoded data signal is a first DC-
4 balanced signal; and
5 spreading the encoded data signal with a spreading code
6 to generate an output transmission signal,
7 wherein the output transmission signal is a
8 second DC-balanced signal.

1 2. The method as claimed in claim 1, wherein the
2 Manchester Code is used to encode the data signal.

3 3. The method of claim 1 wherein the encoded data
4 signal comprises the data signal and an inversion of the
5 data signal.

1 4. The method of claim 1 wherein the encoded data
2 signal comprises the data signal and a reversed inversion of
3 the data signal.

1 5. The method of claim 1 wherein each bit in the data
2 signal corresponds to two bits in the encoded data signal
3 exclusively.

1 6. A method for encoding a data signal, comprising
2 the steps of:
3 spreading the data signal with a spreading code to
4 generate a transmission signal, wherein the
5 transmission signal corresponds to the data
6 signal; and

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7 encoding the transmission signal into an output
8 transmission signal, wherein the output
9 transmission signal contains bits, the value of
10 each bit is either a first value or a second
11 value, and the number of bits with the first
12 value is equal to the number of bits with the
13 second value in the output transmission signal;
14 wherein the output transmission signal is a DC-balanced
15 signal.

1 7. The method of claim 6, wherein the Manchester Code
2 is used to encode the transmission signal.

1 8. The method of claim 6 wherein the output
2 transmission signal comprises the transmission signal and an
3 inversion of the transmission signal.

1 9. The method of claim 6 wherein the output
2 transmission signal comprises the transmission signal and a
3 reversed inversion of the transmission signal.

1 10. The method of claim 6 wherein each bit in the data
2 signal corresponds to two bits in the encoded data signal
3 exclusively.

1 11. A method for encoding a data signal, comprising:
2 generating a spreading code, wherein the spreading code
3 contains a direct current (DC) component;
4 encoding the spreading code into an encoded spreading
5 code, wherein the encoded spreading code is a
6 first DC-balanced signal ; and

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7 spreading the data signal with the encoded spreading
8 code to generate an output transmission signal,
9 wherein the output transmission signal is a
10 second DC-balanced signal.

1 12. The method of claim 11, wherein the Manchester
2 Code is used to encode the spreading code.

1 13. The method of claim 11 wherein the encoded
2 spreading code comprises the spreading code and an inversion
3 of the spreading code.

1 14. The method of claim 11 wherein the encoded
2 spreading code comprises the spreading code and a reversed
3 inversion of the spreading code.

1 15. The method of claim 11 wherein each bit in the
2 spreading code corresponds to two bits in the encoded
3 spreading code exclusively.

1 16. The method of claim 11 wherein the spreading code
2 is a Barker code, and the sequence of the Barker code is
3 {1,1,1,0,0,0,1,0,0,1,0}.

1 17. The method of claim 11 wherein the spreading code
2 is a Pseudo random Noise (PN) sequence.

1 18. An apparatus for encoding a data signal,
2 comprising:
3 an encoder for encoding the data signal into an encoded
4 data signal and outputting the encoded data
5 signal, wherein the encoded data signal is a
6 first DC-balanced signal;

7 a spreading code generator for outputting a spreading
8 code; and
9 a spreader coupling to the spreading code generator and
10 the encoder, for spreading the encoded data
11 signal according to the spreading code and
12 outputting an output transmission signal;
13 wherein the output transmission signal is a second DC-
14 balanced signal.

1 19. The apparatus of claim 18, wherein the Manchester
2 Code is used to encode the data signal.

3 20. The apparatus of claim 18 wherein the encoded data
4 signal comprises the data signal and an inversion of the
5 data signal.

1 21. The apparatus of claim 18 wherein the encoded data
2 signal comprises the data signal and a reversed inversion of
3 the data signal.

1 22. The apparatus of claim 18 wherein each bit in the
2 data signal corresponds to two bits in the encoded data
3 signal exclusively.

1 23. The apparatus of claim 22 wherein the two
2 corresponding bits in the encoded data signal are the first
3 value and the second value respectively if the bit in the
4 data signal is the first value, and the two corresponding
5 bits in the encoded data signal are the second value and the
6 first value respectively if the bit in the data signal is
7 the second value.

1 24. The apparatus of claim 18 further comprising:
2 a modulator for modulating the output transmission
3 signal using a carrier wave to obtain a modulated
4 signal; and
5 an output device for outputting the modulated signal.

1 25. An apparatus for encoding a data signal,
2 comprising:
3 a spreading code generator for outputting a spreading
4 code;
5 a spreader coupled to the spreading code generator, for
6 spreading the data signal according to the
7 spreading code, and outputting a transmission
8 signal; and
9 an encoder coupled to the spreader, for encoding the
10 transmission signal and outputting an output
11 transmission signal, wherein the output
12 transmission signal contains bits, the value of
13 each bit is either a first value or a second
14 value, and the number of bits with the first
15 value is equal to the number of bits with the
16 second value in the encoded data signal;
17 wherein the output transmission signal is a DC-balanced
18 signal.

1 26. The apparatus of claim 25, wherein the Manchester
2 Code is used to encode the data signal.

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3 27. The apparatus of claim 25 wherein the output
4 transmission signal comprises the transmission signal and an
5 inversion of the transmission signal.

1 28. The apparatus of claim 25 wherein the output
2 transmission signal comprises the transmission signal and a
3 reversed inversion of the transmission signal.

1 29. The apparatus of claim 25 wherein each bit in the
2 transmission signal corresponds to two bits in the output
3 transmission signal exclusively.

1 30. An apparatus for encoding a data signal,
2 comprising:
3 a spreading code generator for outputting a spreading
4 code, wherein the spreading code contains a
5 direct current (DC) component;
6 an encoder coupling to the spreading code generator,
7 for encoding the spreading code and outputting an
8 encoded spreading code, wherein the encoded
9 spreading code is a first DC-balanced signal ;
10 a spreader coupled to the encoder, for spreading the
11 data signal according to the encoded spreading
12 code, and outputting an output transmission
13 signal; and
14 wherein the output transmission signal is a second DC-
15 balanced signal.

1 31. The apparatus of claim 30, wherein the Manchester
2 Code is used to encode the data signal.

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1 32. The apparatus of claim 30 wherein the encoded
2 spreading code comprises the spreading code and an inversion
3 of the spreading code.

1 33. The apparatus of claim 30 wherein the encoded
2 spreading code comprises the spreading code and a reversed
3 inversion of the spreading code.

1 34. The apparatus of claim 30 wherein each bit in the
2 spreading code corresponds to two bits in the encoded
3 spreading code exclusively.

1 35. The apparatus of claim 30 wherein the spreading
2 code is a Barker code, and the sequence of the Barker code
3 is {1,1,1,0,0,0,1,0,0,1,0}.

1 36. The apparatus of claim 35 wherein the encoded
2 spreading code comprises an encoded Barker code, and the
3 encoded Barker code is obtained by deleting one of the
4 fourth, fifth, sixth, eighth, ninth, or eleventh bits of the
5 Barker code.

1 37. The apparatus of claim 30 wherein the spreading
2 code is a Pseudo random Noise (PN) sequence.

3 38. The apparatus of claim 30 further comprising:
4 a modulator for modulating the output transmission
5 signal using a carrier wave to obtain a modulated
6 signal; and
7 an output device for outputting the modulated signal.